

Laucks® Testing Laboratories, Inc.

940 South Harney St., Seattle, WA 98108 (206) 767-5060 FAX 767-5063

Certificate

Chemistry Microbiology and Technical Services

CLIENT: Alaskan Copper Works
P.O. Box 3546
Seattle, WA 98124
ATTN: Raphael

LABORATORY NO. 16848

DATE: June 9, 1989

PO# M10235

REPORT ON: WATER

SAMPLE

IDENTIFICATION: Submitted 06/02/89 and identified as shown below:

- 1) 5-2-3200-M10235
- 2) 5-4-3200-M10235
- 3) 5-9-3200-M10235
- 4) 5-11-3200-M10235
- 5) 5-16-3200-M10235
- 6) 5-18-3200-M10235
- 7) 5-23-3200-M10235
- 8) 5-25-3200-M10235
- 9) 5-31-3200-M10235

TESTS PERFORMED AND RESULTS:

parts per million (mg/L)

| | <u>1</u> | <u>2</u> | <u>3</u> | <u>4</u> | <u>5</u> |
|----------|----------|----------|----------|----------|----------|
| Chromium | 2.4 | 0.44 | 9.6 | 1.6 | 0.70 |
| Copper | 0.56 | 0.32 | 2.9 | 0.46 | 0.25 |
| Nickel | 2.2 | 0.42 | 8.8 | 1.5 | 0.45 |
| Zinc | 0.036 | 0.022 | 0.11 | 0.034 | 0.018 |



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AKC-0014998



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Chemistry, Microbiology, and Technical Services

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Alaskan Copper Works

LABORATORY NO. 16848

parts per million (mg/L)

| | <u>6</u> | <u>7</u> | <u>8</u> | <u>9</u> |
|----------|----------|----------|----------|----------|
| Chromium | 0.72 | 1.8 | 0.30 | 0.60 |
| Copper | 0.30 | 0.94 | 0.17 | 0.36 |
| Nickel | 1.2 | 3.7 | 0.30 | 0.54 |
| Zinc | 0.028 | 0.080 | 0.012 | 0.028 |

Respectfully submitted,

Laucks Testing Laboratories, Inc.

J. M. Owens

JMO:emt



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APPENDIX

Matrix Spike/Matrix Spike Duplicate Report

Inorganics/Metals Analyses

| Sample | Analyte | parts per million (mg/L) | | | | mg/L | | QC Limits | | |
|--------|----------|--------------------------|---------------|-----------|-------|------------|-------|-----------|-----|--------|
| | | Spike Added | Sample Result | MS Result | % Rec | MSD Result | % Rec | RPD | RPD | REC |
| 1 | Chromium | 0.05 | 2.4 | 2.4 | 100. | 2.5 | 200.* | 50.* | 0-6 | 67-127 |
| 1 | Zinc | 0.10 | 0.036 | 0.11 | 70. | 0.10 | 66. | 6. | 0-6 | 64-127 |
| 1 | Copper | 0.10 | 0.56 | 0.54 | * | 0.50 | * | 8.* | 0-7 | 65-122 |
| 1 | Nickel | 0.1 | 2.2 | 2.3 | 100. | 2.3 | 100. | 0. | 0-5 | 66-125 |

MS = Matrix Spike

MSD = Matrix Spike Duplicate

Rec = Recovery

RPD = Relative Percent Difference

*Samples are spiked prior to preparation and analysis at a level deemed to be generally appropriate to the average sample processed in the laboratory. In this case, the level of analyte already present in the sample was large enough to make an accurate determination of spike recovery impossible.



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